

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L6	32816	(H2 or H?sub\$2 or hydrogen) same(oxygen or O2 or O?sub\$2) same catalyst	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2004/11/09 18:10
L7	12146	(H2 or H?sub\$2 or hydrogen) same (oxygen or O2 or O?sub\$2) same catalyst same (vapor or moisture or water)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2004/11/09 18:11
L8	9333	7 and (chamber or reactor or vessel or furnace or apparatus)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2004/11/09 18:12
L9	6264	8 and (oxidat\$6 or oxidiz\$6)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2004/11/09 18:13
L10	2780	9 and (semiconductor or Si or silicon or SiO2 or SiO?sub\$2 or IC or (integrated adj. circuit))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2004/11/09 18:14
L11	1621	10 and (@ad<="19970305" or @rlad<="19970305")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2004/11/09 18:17

FILE 'REGISTRY' ENTERED AT 12:44:52 ON 10 NOV 2004

L1 28 SEA ABB=ON PLU=ON NITROGEN/CN OR N2/MF
 L2 1 SEA ABB=ON PLU=ON SILICA/CN
 L3 42 SEA ABB=ON PLU=ON WATER/CN OR STEAM/CN OR H2O/MF
 L4 257 SEA ABB=ON PLU=ON STEAM

FILE 'HCAPLUS' ENTERED AT 12:45:51 ON 10 NOV 2004

L5 536157 SEA ABB=ON PLU=ON L3 OR STEAM
 L6 14261 SEA ABB=ON PLU=ON L1 AND L5
 L7 557 SEA ABB=ON PLU=ON L2 AND L6
 L8 46551 SEA ABB=ON PLU=ON THERMAL### (2A)OXID#####
 L9 34 SEA ABB=ON PLU=ON L7 AND L8
 L10 3 SEA ABB=ON PLU=ON L9 AND PURG#####
 L11 2 SEA ABB=ON PLU=ON L9 AND (CHAMBER OR REACTOR OR VESSEL OR
 SINGLE WAFER)
 L12 4 SEA ABB=ON PLU=ON (L10 OR L11)
 D ALL HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 12:47:15 ON 10 NOV 2004

FILE 'HCAPLUS' ENTERED AT 12:49:50 ON 10 NOV 2004

L13 14 SEA ABB=ON PLU=ON L7 AND L1(L) (PURG##### OR REACTOR OR
 VESSEL OR CHAMBER)
 L14 14 SEA ABB=ON PLU=ON L13 NOT L12
 D ALL HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 12:50:22 ON 10 NOV 2004

FILE 'INPADOC, JAPIO, WPIX' ENTERED AT 12:51:56 ON 10 NOV 2004

L15 3 SEA ABB=ON PLU=ON JP07297181/PN
 D BRO
 D MAX 2-3

FILE 'REGISTRY' ENTERED AT 12:54:34 ON 10 NOV 2004

L16 19 SEA ABB=ON PLU=ON HYDROGEN/CN OR H2/MF
 L17 27 SEA ABB=ON PLU=ON OXYGEN/CN OR O2/MF

FILE 'HCAPLUS' ENTERED AT 12:55:44 ON 10 NOV 2004

L18 6960 SEA ABB=ON PLU=ON L16 AND L17 AND L3
 L19 1350 SEA ABB=ON PLU=ON L18 AND CATALY#####
 L20 10 SEA ABB=ON PLU=ON L7 AND (SMOOTH##### OR ROUGH#####)
 D ALL HITSTR TOT

L21 169 SEA ABB=ON PLU=ON L19 AND L1
 L22 1 SEA ABB=ON PLU=ON L21 AND (SMOOTH##### OR ROUGH#####)
 L23 20 SEA ABB=ON PLU=ON L21 AND (L2 OR SILICA OR SIO2 OR (SI OR
 SILICON) (W)DIOXIDE)
 D ALL HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 13:00:48 ON 10 NOV 2004

FILE 'HCAPLUS' ENTERED AT 13:03:24 ON 10 NOV 2004

L24 5709 SEA ABB=ON PLU=ON L16 AND L17 AND CATALY#####

FILE 'REGISTRY' ENTERED AT 13:03:59 ON 10 NOV 2004

L25 48 SEA ABB=ON PLU=ON O2SI/MF

FILE 'HCAPLUS' ENTERED AT 13:04:31 ON 10 NOV 2004

L26 123 SEA ABB=ON PLU=ON (L2 OR L25) (L) PREP
 L27 0 SEA ABB=ON PLU=ON L24 AND L26
 L28 57 SEA ABB=ON PLU=ON L24 AND (L2 OR L25) (L) (THERMAL### OR
 OXIDAT#####)
 L29 9 SEA ABB=ON PLU=ON L24 AND (L2 OR L25) (L) (THERMAL### OR
 OXIDI#####)
 L30 57 SEA ABB=ON PLU=ON (L28 OR L29)

L31 24 SEA ABB=ON PLU=ON L30 AND (L3 OR L4 OR STEAM OR WATER OR
H2O)
D ALL HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 13:06:34 ON 10 NOV 2004
L32 0 SEA ABB=ON PLU=ON L16 AND L17

FILE 'HCAPLUS' ENTERED AT 13:08:23 ON 10 NOV 2004
L33 38080 SEA ABB=ON PLU=ON L16 AND L17
L34 0 SEA ABB=ON PLU=ON L33 AND L26
L35 0 SEA ABB=ON PLU=ON L33 AND L26(L)OXID#####
L36 358 SEA ABB=ON PLU=ON L33 AND (L2 OR L25)(L)OXID#####
L37 110 SEA ABB=ON PLU=ON L36 AND (L3 OR L4 OR STEAM OR WATER OR
H2O)
L38 13 SEA ABB=ON PLU=ON L37 AND THERMAL##(2A)OXID#####
D ALL HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 13:10:47 ON 10 NOV 2004

FILE 'STNGUIDE' ENTERED AT 13:12:20 ON 10 NOV 2004

FILE 'REGISTRY' ENTERED AT 13:13:30 ON 10 NOV 2004
L39 2 SEA ABB=ON PLU=ON PLATINUM/CN OR NICKEI/CN

FILE 'HCAPLUS' ENTERED AT 13:13:44 ON 10 NOV 2004
L40 406463 SEA ABB=ON PLU=ON L39
L41 4491 SEA ABB=ON PLU=ON L16 AND L17 AND L40
L42 30 SEA ABB=ON PLU=ON L41 AND L8
L43 444 SEA ABB=ON PLU=ON L41 AND (L2 OR SILICA OR SIO2 OR (SI OR
SILICON) (W)DIOXIDE)
L44 8 SEA ABB=ON PLU=ON L42 AND L43
L45 0 SEA ABB=ON PLU=ON (L42 OR L43) AND SINGLE WAFER
L46 60 SEA ABB=ON PLU=ON (L42 OR L43) AND SEMICONDUCT#####
L47 92 SEA ABB=ON PLU=ON (L42 OR L43) AND L3
L48 13 SEA ABB=ON PLU=ON L46 AND L47
L49 21 SEA ABB=ON PLU=ON L44 OR L48
D ALL HITSTR TOT

L20 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1994:179271 HCAPLUS
 DN 120:179271
 ED Entered STN: 02 Apr 1994
 TI Oxide growth in cluster tools
 AU Granneman, E.H.A.
 CS DIMEs, Delft Univ. Technol., Delft, Neth.
 SO Microelectronic Engineering (1993), 22(1-4), 11-20
 CODEN: MIENEF; ISSN: 0167-9317
 DT Journal
 LA English
 CC 76-3 (Electric Phenomena)
 AB Wafer processing systems in which wafer pre-clean, dry oxidation and polysilicon deposition processes are integrated in a vacuum system are very useful to grow thin oxide films with (sub-)monolayer control. Most attention is paid to batch-type cluster systems. The wafer pre-clean is based on vapor-phase HF etch processes. The background H₂O, O₂ concns. appear to play a major role in such systems. By admixing a small amount of O to the 100 Pa pure N ambient, surface **roughening** can be prevented. The capabilities of such systems are illustrated by showing that Si-Si contacts with low contact resistance, poly-emitter structures with tunable, sharply-peaked gain distributions, and poly-gate structures with high elec. breakdown fields can be produced. Life tests in which the poly-gate capacitors are current-stressed indicate that HF vapor pre-cleans lead to a lower failure rate at early times than wet HF pre-cleans. However, the charge-to-breakdown (Qbd) of HF vapor etched samples is **roughly 10%** lower than that of those etched in wet HF solns. This might be caused by a somewhat larger surface **roughening** in the HF vapor case.
 ST oxide growth silicon wafer processing
 IT Electric capacitors
 (poly-gate MOS)
 IT 7631-86-9, Silicon dioxide, properties
 RL: PRP (Properties)
 (growth of, in polysilicon deposition processes)
 IT 7664-39-3, Hydrogen fluoride, uses
 RL: USES (Uses)
 (in silicon wafer processing)
 IT 7440-21-3, Silicon, reactions
 RL: PRP (Properties)
 (oxide growth on polycryst., in wafer processing)
 IT 7732-18-5, Water, uses 7782-44-7, Oxygen (O₂), uses
 RL: USES (Uses)
 (role of, in oxide growth in wafer processing)
 IT 7727-37-9, Nitrogen, uses
 RL: USES (Uses)
 (surface **roughening** prevention by, during silicon wafer processing)
 IT 7631-86-9, Silicon dioxide, properties
 RL: PRP (Properties)
 (growth of, in polysilicon deposition processes)
 RN 7631-86-9 HCAPLUS
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O==Si==O

IT 7732-18-5, Water, uses
 RL: USES (Uses)
 (role of, in oxide growth in wafer processing)
 RN 7732-18-5 HCAPLUS
 CN Water (8CI, 9CI) (CA INDEX NAME)

H₂O

IT 7727-37-9, Nitrogen, uses
RL: USES (Uses)
(surface roughening prevention by, during silicon wafer
processing)
RN 7727-37-9 HCAPLUS
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

L15 ANSWER 2 OF 3 JAPIO (C) 2004 JPO on STN
AN 1995-297181 JAPIO
TI METHOD AND APPARATUS FOR THERMAL OXIDATION TREATMENT
IN KIMURA HIDEKI
PA SONY CORP
PI JP 07297181 A 19951110 Heisei
AI JP 1994-81612 (JP06081612 Heisei) 19940420
PRAI JP 1994-81612 19940420
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1995
IC ICM H01L021-316
ICS H01L021-22; H01L021-26; H01L021-31; H01L021-324
AB PURPOSE: To eliminate the problem of dew condensation and to perform a thermal oxidation treatment using a treatment gas which contains mixture even when a thermal oxidation treatment apparatus which is provided with an inner tube and with an outer tube is used.
CONSTITUTION: A thermal oxidation treatment apparatus is provided with an inner tube 4 constituting a treatment chamber which oxidizes and treats a semiconductor substrate 2 to be treated, with a heating mechanism 1 which heats the treatment chamber and, in addition, with an outer tube 6 as an outer frame. In the thermal oxidation treatment apparatus, the temperature of the outer tube is controlled by a temperature control medium 8 such as a liquid at a boiling point of 100°C or higher or a gas which is stable at 100 to 300°C so as to prevent overheating and to prevent the dew condensation of the inner tube.
COPYRIGHT: (C)1995, JPO

L38 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1986:525503 HCAPLUS
 DN 105:125503
 ED Entered STN: 03 Oct 1986
 TI Semiconductor processing facility for providing an enhanced oxidation rate
 IN Bean, Kenneth E.; Havemann, Robert H.; Lane, Andrew
 PA Texas Instruments Inc., USA
 SO U.S., 5 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC ICM B05D005-12
 ICS C23C016-00
 NCL 427093000
 CC 76-3 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4599247	A	19860708	US 1985-688771	19850104
	JP 61216332	A2	19860926	JP 1985-299613	19851227
PRAI	US 1985-688771		19850104		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 4599247	ICM	B05D005-12
	ICS	C23C016-00
	NCL	427093000

AB A method for forming a **thermal oxide** layer on a Si substrate includes placing the substrate into a quartz tube capable of containing a high pressure (e.g., 1-20 atm) atmospheric, out-gassing and hermetically sealing the tube, heating the tube to a predetd. temperature [e.g., 1000°-(30° times a selected pressure in atm)] above the b.p. of H₂O at the selected pressure, and introducing **steam** into the tube at the selected pressure (e.g., .apprx.3-10 atm) to form the oxide layer. The **steam** may be injected directly into the tube, or it may be produced by dripping H₂O or injecting H₂ and O₂ into the tube. Assemblies formed from quartz, SiC, Si, or combinations of these may be placed in the tube. The method allows the growth of **thermal oxide** layers to be carried out at high pressures (and therefore at low temps. and/or for short periods compared to oxidation at atmospheric pressure) using conventional furnaces.

ST high pressure **thermal oxidn** silicon; quartz tube high pressure oxidn

IT **Steam**
 (in oxidation of silicon in high-pressure apparatus)

IT 409-21-2, properties

RL: PRP (Properties)
 (assembly of, in high-pressure apparatus for **thermal oxidn** of silicon)

IT 11126-22-0P

RL: PNU (Preparation, unclassified); PREP (Preparation)
 (high-pressure apparatus for formation of, on silicon substrates by **thermal oxidn.**)

IT 14808-60-7, uses and miscellaneous

RL: USES (Uses)
 (high-pressure tube of, in **thermal oxidn.** of silicon)

IT 7732-18-5, vapor

RL: USES (Uses)
 (in oxidation of silicon in high-pressure apparatus)

IT 7782-44-7, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with hydrogen for **steam** in high-pressure apparatus for **thermal oxidn.** of silicon)

IT 1333-74-0, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with oxygen for **steam** in high-pressure apparatus for
thermal oxidn. of silicon)
 IT 7440-21-3, reactions
 RL: TEM (Technical or engineered material use); USES (Uses)
 (thermal oxidn. layer formation on, high-pressure
 apparatus for)
 IT 14808-60-7, uses and miscellaneous
 RL: USES (Uses)
 (high-pressure tube of, in **thermal oxidn.** of
 silicon)
 RN 14808-60-7 HCPLUS
 CN Quartz (SiO₂) (9CI) (CA INDEX NAME)



IT 7732-18-5, vapor
 RL: USES (Uses)
 (in oxidation of silicon in high-pressure apparatus)
 RN 7732-18-5 HCPLUS
 CN Water (8CI, 9CI) (CA INDEX NAME)



IT 7782-44-7, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with hydrogen for **steam** in high-pressure apparatus
 for **thermal oxidn.** of silicon)
 RN 7782-44-7 HCPLUS
 CN Oxygen (8CI, 9CI) (CA INDEX NAME)



IT 1333-74-0, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with oxygen for **steam** in high-pressure apparatus for
thermal oxidn. of silicon)
 RN 1333-74-0 HCPLUS
 CN Hydrogen (8CI, 9CI) (CA INDEX NAME)



L38 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1997:638189 HCAPLUS
 DN 127:282133
 ED Entered STN: 08 Oct 1997
 TI Oxidation behavior of a SiC-based fiber
 AU Viricelle, J. P.; Bahloul-Hourlier, D.; Goursat, P.
 CS LMCTS, Univ. Limoges, Limoges, F-87060, Fr.
 SO Key Engineering Materials (1997), 127-131(Pt. 1, Ceramic and Metal Matrix Composites, Pt. 1), 203-210
 CODEN: KEMAEY; ISSN: 1013-9826
 PB Trans Tech
 DT Journal
 LA English
 CC 57-2 (Ceramics)
 AB Reported is the oxidation kinetics of Nicalon fibers at 900-1200° in dry and wet O₂. The fibers consisted of 3 phases: SiC nanocrystals, SiCxO_y amorphous continuum, and free C along with residual H which formed water vapor on oxidation and thus influenced the kinetics. The influence of water vapor was significant at 0-0.75 kPa. The effect of residual H was minimized by thermal pretreatment of the fibers in He at 1250°. Under these conditions, a diffusion-controlled regime was established after a transient period, which could not be modeled by the classical linear-parabolic law characteristic of a mixed reaction-diffusion regime. The weak apparent activation energy obtained in dry O₂ (85 kJ/mol) for the diffusion mechanism, compared to the literature values (120 kJ/mol) for O₂ permeation through amorphous silica indicated that this process was not the only limiting step or that silica had a different texture, depending on the nature of the substrate.
 ST Nicalon fiber oxidn kinetics thermal stability; silicon carbide ceramic fiber oxidn kinetics
 IT Synthetic fibers
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (ceramic; oxidation kinetics of Nicalon fibers at 900-1200° in dry and wet O₂)
 IT Ceramics
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (fibers; oxidation kinetics of Nicalon fibers at 900-1200° in dry and wet O₂)
 IT Diffusion activation energy
 (for O₂ permeation through amorphous silica at Nicalon fibers)
 IT Diffusion
 (limiting diffusion mechanism in oxidation of Nicalon fibers at 900-1200° in O₂)
 IT Oxidation kinetics
 (oxidation kinetics of Nicalon fibers at 900-1200° in dry and wet O₂)
 IT Synthetic fibers
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (silicon carbide; oxidation kinetics of Nicalon fibers at 900-1200° in dry and wet O₂)
 IT 7732-18-5, Water, processes
 RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process) (effect on oxidation kinetics of Nicalon fibers at 900-1200° in O₂)
 IT 7631-86-9, Silica, formation (nonpreparative)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative) (formation by oxidn. of Nicalon fibers at 900-1200° in O₂)
 IT 7782-44-7, Oxygen, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process) (oxidation kinetics of Nicalon fibers at 900-1200° in dry and wet

O2)

IT 409-21-2, Silicon carbide, processes . 7440-44-0, Carbon, processes
 39345-87-4, Silicon carbide oxide
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);
 PROC (Process)
 (oxidation kinetics of Nicalon fibers consisting of SiC nanocrystals,
 amorphous SiCxOy, and free C at 900-1200° in dry and wet O2)
 IT 1333-74-0, Hydrogen, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (residual; effect on oxidation kinetics of Nicalon fibers at
 900-1200° in O2 by formation of water)
 IT 7732-18-5, Water, processes
 RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical
 process); FORM (Formation, nonpreparative); PROC (Process)
 (effect on oxidation kinetics of Nicalon fibers at 900-1200° in O2)
 RN 7732-18-5 HCAPLUS
 CN Water (8CI, 9CI) (CA INDEX NAME).

H₂O

IT 7631-86-9, Silica, formation (nonpreparative)
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (formation by oxidn. of Nicalon fibers at 900-1200° in
 O2)
 RN 7631-86-9 HCAPLUS
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O==Si==O

IT 7782-44-7, Oxygen, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (oxidation kinetics of Nicalon fibers at 900-1200° in dry and wet
 O2)
 RN 7782-44-7 HCAPLUS
 CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O==O

IT 1333-74-0, Hydrogen, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (residual; effect on oxidation kinetics of Nicalon fibers at
 900-1200° in O2 by formation of water)
 RN 1333-74-0 HCAPLUS
 CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H—H

L49 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1998:656053 HCAPLUS
 DN 129:332568
 ED Entered STN: 16 Oct 1998
 TI Reaction furnace for generation of water vapor.
 IN Oomi, Tadahiro; Kawada, Koji; Tanabe, Yoshikazu; Ikeda, Shinichi;
 Morimoto, Akihiro; Minamiru, Yukio
 PA Fujikin K. K., Japan; Hitachi, Ltd.
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01L021-31
 CC 47-3 (Apparatus and Plant Equipment)
 Section cross-reference(s): 56, 76

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10270437	A2	19981009	JP 1997-74130	19970326
	JP 3393031	B2	20030407		
	TW 440542	B	20010616	TW 1998-87116013	19980925
PRAI	JP 1997-74130	A	19970326		
	JP 1997-109989	A	19970428		

CLASS

	PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
	JP 10270437	ICM	H01L021-31

AB The title apparatus includes 2 furnace members (e.g., SUS316L) combined to form a furnace body having an inner space, a gas supply path on 1 furnace member for supplying feed gases (i.e., H₂ and O₂) into the inner space, an outlet path on the other furnace member for discharging formed water vapor (moisture), an inlet side reflector having a wall-perforated cylindrical casing and a reflection plate concentrically arranged at the inner side of the gas supply path, a filter arranged in the inner space, an outlet side reflector having a wall-perforated cylindrical casing, a reflection plate and a diffusion filter concentrically arranged at the inner side of the outlet path, and Pt coatings (with TiN barrier coatings) on the inner surfaces of the furnace members. The apparatus is mainly used for forming SiO₂ films on Si substrates by water vapor oxidation method in semiconductor industry.

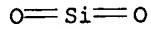
IT 7440-06-4, Platinum, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coatings; reaction furnace for generation of water vapor for oxidation of silicon substrates)

RN 7440-06-4 HCAPLUS
 CN Platinum (8CI, 9CI) (CA INDEX NAME)

Pt

IT 7631-86-9P, Silica, uses
 RL: NUU (Other use, unclassified); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
 (films; reaction furnace for generation of water vapor for oxidation of silicon substrates)

RN 7631-86-9 HCAPLUS
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 1333-74-0, Hydrogen, reactions 7782-44-7, Oxygen,

reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction furnace for generation of water vapor for oxidation of silicon
substrates)

RN 1333-74-0 HCAPLUS

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

RN 7782-44-7 HCAPLUS

CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O=O

IT 7732-18-5P, Water, preparation

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(vapor; reaction furnace for generation of water vapor for oxidation of
silicon substrates)

RN 7732-18-5 HCAPLUS

CN Water (8CI, 9CI) (CA INDEX NAME)

H₂O

L15 ANSWER 3 OF 3 WPIX COPYRIGHT 2004 THE THOMSON CORP on STN
AN 1996-025421 [03] WPIX
DNN N1996-021556 DNC C1996-008417
TI Heat oxidation process - involves using temperature control medium to control temperature of outer tube.

DC L03 U11
PA (SONY) SONY CORP

CYC 1
PI JP 07297181 A 19951110 (199603)* 6 H01L021-316 <--

ADT JP 07297181 A JP 1994-81612 19940420

PRAI JP 1994-81612 19940420

IC ICM H01L021-316
ICS H01L021-22; H01L021-26; H01L021-31; H01L021-324

AB JP 07297181 A UPAB: 19960122

The process uses an appts. which comprises an inner tube (4). The inner tube includes a processing chamber which performs heat oxidation of a semiconductor substrate (2). A heating mechanism (1) such as a halogen lamp, heats the processing chamber. An outer tube (6) is provided with an external frame. The temperature of the outer tube is controlled by a temperature controlling medium (8) comprising coolant such as stable gas, whose temperature is about 100 deg.C or 100-300 deg.C.

USE/ADVANTAGE - Process is used in formation of heat oxide film for silicon semiconductor devices, preventing overheating and condensation of dew in inner tube.

Dwg.1/2

FS CPI EPI

FA AB; GI

MC CPI: L04-C12A; L04-C16; L04-D05
EPI: U11-C05B1

L12 ANSWER 4 OF 4 HCPLUS COPYRIGHT 2004 ACS on STN
 AN 1996:38767 HCPLUS
 DN 124:74059
 ED Entered STN: 20 Jan 1996
 TI Manufacture of **thermal oxides** on semiconductor device
 elements and apparatus therefor
 IN Kimura, Hideki
 PA Sony Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01L021-316
 ICS H01L021-22; H01L021-26; H01L021-31; H01L021-324
 CC 76-3 (Electric Phenomena)

FAN.CNT 1
 PATENT NO. KIND DATE APPLICATION NO. DATE

 PI JP 07297181 A2 19951110 JP 1994-81612 19940420
 PRAI JP 1994-81612 19940420

CLASS
 PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

 JP 07297181 ICM H01L021-316
 ICS H01L021-22; H01L021-26; H01L021-31; H01L021-324

AB The manufacturing process employs: a quartz inner capsule containing a semiconductor
 substrate; a port for a **purgung** N2; a port for a mixture of O2 and
 H2O for forming the oxide layer; and a stainless steel outer capsule
 containing heat lamps, where the wall of the outer capsule contains a heating
 pipe for passing through a liquid (b.p. > 100) or a gas (stable at
 100-300°).

ST oxide wet formation silicon wafer manufg

IT Semiconductor devices
 (manufacture of **thermal oxides** on semiconductor device
 elements)

IT 14808-60-7, Quartz, uses
 RL: DEV (Device component use); USES (Uses)
 (manufacture of **thermal oxides** on semiconductor device
 elements)

IT 7440-21-3, Silicon, uses 7631-86-9, Silica, uses
 7727-37-9, Nitrogen, uses 7732-18-5, Water, uses
 7782-44-7, Oxygen, uses
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or
 reagent); USES (Uses)
 (manufacture of **thermal oxides** on semiconductor device
 elements)

IT 7631-86-9, Silica, uses 7727-37-9, Nitrogen, uses
 7732-18-5, Water, uses
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or
 reagent); USES (Uses)
 (manufacture of **thermal oxides** on semiconductor device
 elements)

RN 7631-86-9 HCPLUS
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

RN 7727-37-9 HCPLUS
 CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7732-18-5 HCAPLUS
CN Water (8CI, 9CI) (CA INDEX NAME)

H₂O